



NATIONAL SCIENCE FOUNDATION
4201 Wilson Boulevard
Arlington, VA 22230

19 September 2010

MEMORANDUM

TO: Pamela G. O'Neil, Staff Associate,
NSF Office of Integrative Activities

VIA: W. Lance Haworth, Director
NSF Office of Integrative Activities

FROM: Henry N. Blount, III, Director
NSF Office of Experimental Program to
Stimulate Competitive Research

SUBJECT: Documentation Regarding FY 2009 Committee of Visitors
Review of EPSCoR

This memorandum summarizes actions of the Office of Integrative Activities (OIA) Committee of Visitors (COV) that reviewed the NSF Experimental Program to Stimulate Competitive Research (EPSCoR) on August 11-12, 2009.

The COV roster and profiles of COV members are shown in **Attachment I**. Demographically, this six-person Committee was 67% male, 33% female, 50% Caucasian, 33% Black, and 33% Hispanic; no persons with disabilities were members of the COV. The Committee was chaired by Professor Willie Pearson, Jr, of the Georgia Institute of Technology.

The agenda for the COV review is given in **Attachment II**. The meeting began with a welcome, introductions of COV members and EPSCoR staff, and a review of the agenda. The OIA Director then briefed the COV regarding the purpose, process, and expected outcomes of the review. Using the presentation graphics in **Attachment III**, the EPSCoR Director provided an update of events in EPSCoR since the FY 2005 COV review, including recommendations from the FY 2006 EPSCoR 2020 Workshop Report and progress that had been made toward implementation of those recommendations.

The EPSCoR Director then charged the COV as outlined in **Attachment IV**, whereupon the Committee began its work. During the two-day process, the COV conducted a detailed analysis of 108 of the 1,483 actions taken by EPSCoR over the four year period (FY 2005 – FY 2008) which was the targeted of the review. Prior to the meeting, Professor Pearson had directed the selection of actions to be examined. No additional actions were requested for examination by the Committee during the review.

The COV completed its closed session work by mid-afternoon on the second day of the review. The Committee then presented its findings to the EPSCoR staff. (The OIA Director had been called away and was unable to attend this presentation of findings.) The meeting was then adjourned.

Within the prescribed two weeks of the COV meeting, Professor Pearson, the Committee Chair, transmitted the final Committee of Visitors Report to the Director of the Office of Integrative Activities. The 24 August 2009 letter of transmittal is appended as **Attachment V**; that letter provides a summary of the actions and findings of the COV. The COV Report is appended as **Attachment VI**, the OIA Director's e-correspondence with the COV Chair accepting the report is enclosed in **Attachment VII**, and the EPSCoR Responses to Findings and Recommendations of the FY 2009 Committee of Visitors Report is appended as **Attachment VIII**.

Experimental Program to Stimulate Competitive Research (EPSCoR)

2009 Committee of Visitors (COV)

BIOGRAPHICAL SKETCHES



Héctor Abruña, Emile M. Chamot Professor of Chemistry and Chair, completed his graduate studies with Royce W. Murray and Thomas J. Meyer at the University of North Carolina at Chapel Hill in 1980 and was a postdoctoral research associate with Allen J. Bard at the University of Texas at Austin. After a brief stay at the University of Puerto Rico, he came to Cornell in 1983.

Prof. Abruña has been the recipient of numerous awards including a Presidential Young Investigator Award, Sloan Fellowship, J. S. Guggenheim Fellowship and J. W. Fulbright Senior Fellow. Most recently he received the ACS Award in Electrochemistry for 2007. He was elected Fellow of the American Association for the Advancement of Science in 2007 and elected member of the American Academy of Arts and Sciences in 2007.

The signal accomplishment of Abruña's research has been to take a multidisciplinary approach to the study of electrochemical phenomena by combining elements of various branches of chemistry, physics and biochemistry. He has incorporated concepts of coordination chemistry and biochemistry into the area of chemically modified electrodes and their analytical application in sensors, for transition metal ions and organic functionalities, biosensors and in electrocatalytic applications.

He pioneered the use of x-ray based techniques such as surface EXAFS, x-ray standing waves and surface diffraction (including time-resolved studies) to the in-situ study of electrochemical interfaces. In particular, his group has carried out extensive studies of the underpotential deposition (UPD) of metal monolayers onto single crystal electrode surfaces using these techniques to obtain structural and compositional information in-situ.

Most recently, his work has focused on the synthesis and development of nanometric building blocks, including extensive studies on redox and photoactive dendrimers as well as novel families of terpyridine-based bridging ligands capable of self-assembly (via-metal ion coordination) onto surfaces into exceptionally well-ordered arrays. These materials have also been incorporated into high efficiency OLED's (organic light emitting devices) with long-term stability. In the field of molecular electronics and in collaboration with colleagues in the department of physics, they developed, making use of some of the nanometric building blocks described above, the first example of a single-molecule transistor with gate voltage dependent conductance. In the area of fuel cells, he (in collaboration with F. DiSalvo) demonstrated that ordered intermetallic phases such as PtBi and PtPb can exhibit extraordinary electrocatalytic activity for fuel cell applications. The search for new electrocatalysts has been expanded by the use of combinatorial methods so that, at present, they can screen hundreds of different materials a week. This high throughput and wide search for new electrocatalysts, could usher a new era in fuel cell research.

Prof. Abruña is the co-author of over 275 publications and has given over 400 invited lectures world-wide. An integral part of Prof. Abruña's professional accomplishments derives from his deep commitment to education and teaching. Of particular importance has been the number of his students that have gone on to academic positions. Out of the 27 students that, to date, have obtained a Ph.D. with him, 11 have gone on to faculty positions. In addition Prof. Abruña has served as a role model for minority students in general and Hispanic students in particular. Eight Hispanic students have earned a Ph.D. under his guidance and three currently hold faculty positions. Thus, Prof. Abruña combines both, research and educational aspects in the true spirit of an educator.



James Coleman is Vice Provost for Research and Professor of Ecology and Evolutionary Biology at Rice University where he is charged with facilitating the growth of research at Rice, and he is responsible for oversight of Rice's \$100,000,000 research enterprise.

The role of the Office of Research is to facilitate the ability of Rice's faculty to excel at research and to ensure that the broader Rice community understands the important role that research, creativity, innovation and scholarship play in generating the intellectual energy that makes Rice such a special place. We try to do this by providing high quality support functions for identifying and securing research funding; developing and submitting high quality research proposals; protecting and commercializing intellectual property; facilitating and creating a culture of compliance with federal, state and local regulations governing research; and promoting the fantastic research ongoing at Rice University. The most recent focus of Coleman's research interests has been the ecological effects of environmental change, but his role as vice provost keep him too busy to run a lab here.

Prior to joining Rice, Jim was the Vice Chancellor for Research and Professor of Biological Sciences at the University of Missouri – Columbia (MU) and he was Vice President for Research and Business Development at the Desert Research Institute (DRI) - an internationally renowned environmental science research institute with annual research expenditures of approximately \$50,000,000 and campuses in both Reno and Las Vegas, Nevada. Jim was an Assistant Professor, and then Associate Professor, of Biology at Syracuse University and he served as a Program Officer for Ecological and Evolutionary Physiology at the National Science Foundation (NSF) where he also ran programs for Dissertation Improvement Awards and a joint agency program in Terrestrial Ecology and Global Change. While at Syracuse University, Jim received an NSF Young Investigator Award, and was recognized for outstanding graduate teaching with Syracuse University's William Wasserstrom Prize. The British journal *The Scientist* reported in 1996 that a paper co-authored by Jim in 1993 (*Oecologia*.93: 195-200) was the number six most cited paper in the field of global change biology and he has been co-author on two significant additional publications in the journal *Nature* on global change biology, including the September 18, 2008 cover article.

Jim has also been heavily involved in building research infrastructure at the national, statewide and university level through role as a chief research officer, and through his role in building research capacity as Nevada's statewide EPSCoR director, as a member of the Board of the Coalition of EPSCoR states, and his current roles as Commissioner, University of Rhode Island Commission for Research and Innovation; Chair, State of Arkansas National Science Foundation EPSCoR external advisory committee; Chair, State of Nevada National Science Foundation EPSCoR external advisory board. He also serves as a Board member, National Space Biomedical Research Institute; Board Member, Southern Universities Research Association; and has served in the past in other capacities including being a Board Member, Missouri Innovation Center; President of the Physiological Ecology Section of the Ecological Society of America; Associate Editor and Editorial Board Member for the journals *Ecology* and *Ecological Monograph*; Associate Editor for *The International Journal of Plant Sciences*.

Jim has a B.S. (Forestry) from the University of Maine and a M.S., M.Phil. and Ph.D. from Yale University. Dr. Coleman also held positions as a postdoctoral researcher in biology at Stanford University and Harvard University. He has been Principal or co-Principal investigator on approximately \$40,000,000 in competitive grants and cooperative agreements and has authored or co-authored over 75 peer reviewed publications.



Jean Futrell, Battelle Fellow at the Department of Energy's Pacific Northwest National Laboratory, has been chosen to receive the American Chemical Society's Frank H. Field and Joe L. Franklin Award for Outstanding Achievement in Mass Spectrometry. The award will be presented at the ACS national meeting in Chicago in March 2007.

Dr. Futrell was selected for his contributions to the theory and practice of mass spectroscopy. His work often focuses on developing or modifying instrumentation for specialized research purposes, including high-pressure and chemical-ionization mass spectrometers. Through this research, Futrell has addressed fundamental questions in mass spectrometry. Among his many contributions to mass spectrometry instrumentation is the invention of tandem mass spectrometry, a technique employed in most commercial mass spectrometers today. His current research involves collisional activation of complex ions in ion-surface interactions and surface modifications by ion capture.

Author of nearly 300 refereed journal articles and invited reviews. Dr. Futrell earned a bachelor's degree in chemical engineering at Louisiana Tech University in 1955, and a doctorate in physical chemistry at the University of California-Berkeley in 1958. He was the first permanent director of the William R. Wiley Environmental Molecular Sciences Laboratory, a major DOE scientific user facility located at PNNL



Sally Mason became the 20th President of The University of Iowa on August 1, 2007. She holds a full professorship with tenure in the Department of Biological Sciences of the College of Liberal Arts and Sciences.

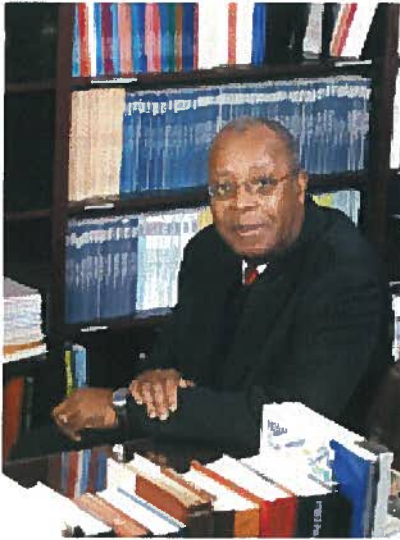
In her first year at Iowa, President Mason initiated a sustainable university initiative, which makes sustainability a central priority of all aspects of the University enterprise—its operations, its academic mission, and its greater responsibilities to society. In addition to building a leadership team, one of President Mason's top priorities has been visiting and listening to the University's many constituencies, internal and external, through meetings, appearances with service organizations, discussions with newspaper editorial boards, and community visits. An unexpected priority of President Mason's first year was the historic flooding of the UI campus and the greater community, and her leadership helped bring the campus community together to preserve as much of the University's resources as possible and rebuild essential facilities in time to open the campus for a full complement of fall semester courses.

The daughter of an immigrant family and the first child to attend college, President Mason received her B.A. in zoology from The University of Kentucky in 1972, her M.S. from Purdue University in 1974, and her Ph.D. in cellular, molecular, and developmental biology from The University of Arizona in 1978. She subsequently spent two years at Indiana University in Bloomington doing postdoctoral research before joining The University of Kansas in 1981. A strong advocate of undergraduate education, she received awards for outstanding undergraduate advising and teaching, and she was awarded a prestigious Kemper Teaching Fellowship. During her 21 years at Kansas, President Mason served as a full professor in the Department of Molecular Biosciences, Acting Chair of the Department of Physiology and Cell Biology, and Associate Dean in the College of Liberal Arts and Sciences. In 1995, she was appointed Dean of the College of Liberal Arts and Sciences, the largest academic unit on the University of Kansas campus.

President Mason served as Provost of Purdue University from 2001-2007, where she was responsible for planning, managing, and reviewing all academic programs at Purdue's West Lafayette campus and four affiliated branch campuses throughout Indiana. Her accomplishments as Provost included increasing diversity, recruiting top faculty, doubling the research program, advancing public engagement, and improving the learning environment for students. During President Mason's tenure as Provost, Purdue hired over 800 new faculty, 300 of which were new positions; 56% of those hires were women and/or minorities. She also formed a diversity leadership group while at Purdue. President Mason was instrumental in the development of Purdue's Discovery Park, an interdisciplinary research incubator focused on such topics as nanotechnology, entrepreneurship, and biosciences.

President Mason is the author of many scientific papers and has obtained a number of research grants from the National Science Foundation, the National Institutes of Health, the Wesley Research Foundation, and the Lilly Endowment. Her research interests have focused on the developmental biology, genetics, and biochemistry of pigment cells and pigments in the skin of vertebrates. She has served as President of both the PanAmerican Society for Pigment Cell Research and the Council of Colleges of Arts and Sciences, and has served as Chair of the Advisory Committee to the National Science Foundation Directorate for Education and Human Resources (EHR) and the Executive Committee of the National Association of State Universities and Land-Grant Colleges (NASULGC) Chief Academic Officers Group. She also served on the Executive Committee of the Committee on Institutional Cooperation (CIC) from 2003-2007 and was appointed to the National Medal of Science Selection Committee from 2006-2008. President Mason currently co-chairs the Task Force on National Energy Policy and Midwestern Competitiveness of the Chicago Council on Global Affairs, a national task force exploring how likely upcoming energy and climate change legislation will impact Midwest economic competitiveness.

President Mason is married to Ken Mason, an educator and textbook author who teaches biological sciences at The University of Iowa.



Willie Pearson, Jr. is Professor, School of History, Technology, and Society, Georgia Institute of Technology. Prior to joining the faculty at Georgia Tech in July 2001, he held a distinguished appointment as Wake Forest Professor of Sociology at Wake Forest University and Adjunct in Medical Education at Wake Forest University School of Medicine. Dr. Pearson received his Ph.D. in sociology from Southern Illinois University at Carbondale in 1981. In 1993, he received Southern Illinois University's College of Liberal Arts' Alumni Achievement Award. In 1999, Dr. Pearson was selected as one of Quality Education for Minorities in Mathematics, Science, and Engineering (QEM/MSE) Network's Giants in Science. In 2001, he was elected a National Associate (life-time appointment) of the National Academy of Sciences. He has held postdoctoral fellowships at the Educational Testing Services (ETS) and the Office of Technology Assessment (OTA), Congress of the United States.

Most of Dr. Pearson's research has centered on the career patterns of Ph.D. scientists - particularly African Americans - and human resource issues in science and engineering. His publications include numerous articles in refereed journals and chapters. He is the author and coauthor of seven books and monographs, including *Black Scientists, White Society and Colorless Science: A Study of Universalism in American Science* (1985), *Blacks, Education and American Science* (1989), *Who Will Do Science?: Educating the Next Generation* (1994), *Diversity in Science and Technology Centers* (1996), *The Role and Activities of American Graduate Schools in Recruiting, Enrolling and Retaining United States Black and Hispanic Students* (2000), *Scientists and Engineering the New Millennium: Renewing the Human Resources* (2001), and *Beyond Small Numbers: Voices of African American Ph.D. Chemists* (2004). He served as Associate Editor of *Contemporary Sociology*, American Sociological Association (1987-91). Dr. Pearson serves or has served on the editorial boards of *Sociological Spectrum*; *Science, Technology and Human Values*; *Journal of Science and Engineering Ethics* and *Educational Evaluation and Policy Analysis*.

Dr. Pearson serves or has served on committees, advisory boards and panels at the National Institutes of Health, National Science Foundation, American Chemical Society, American Association for the Advancement of Science, Burroughs Wellcome Fund, Graduate Records Examination Board, Sloan Foundation, American Sociological Association, Sigma XI and the National Research Council. He was elected president of the Mid-South Sociological Association (1987); a member of the Executive Council, American Sociological Association's Section on Science, Knowledge and Technology (1989-91); and a Governor of the National Conferences on Undergraduate Research (1994-2000). Dr. Pearson's most recent project is a co-edited volume (with Michael Teitelbaum, Sloan Foundation) on changing the face and practice of science and engineering. He has successfully mentored numerous undergraduate students (over 95 percent have advanced degrees). Dr. Pearson has always valued teaching, research and community service. During his career, he has been the recipient of community service, teaching and research awards. Dr. Pearson has served on advisory boards, board of directors and/or committees for the Winston-Salem Urban League, Family Services, Inc. (Winston-Salem, North Carolina), Forsyth Futures, (appointed by the Forsyth County, North Carolina County Commissioners), and Maya Angelou Institute, Winston-Salem State University. Additionally, he served as Co-chair of the Review and Comment Committee of the Forsyth County Juvenile Justice Council.



Ainissa G. Ramirez, Ph.D. is an Associate Professor of Mechanical Engineering at Yale University. Her work focuses on the development of thin film NiTi shape memory alloys for microelectromechanical systems (MEMS). Dr. Ramirez received her training in materials science and engineering at Brown University (Sc.B.) and Stanford University (Ph.D.). She worked as a member of technical staff at Bell Laboratories, Lucent Technologies in Murray Hill, NJ for 4 years before joining the faculty at Yale in 2003. She has been awarded MITs TR100 Young Innovators Award, the Sloan Research Fellowship, and the NSF CAREER award. She has written over 25 technical articles and holds 6 patents. Dr. Ramirez is also a leader in science education and serves as an advisor to the Liberty Science Center (Jersey City, NJ) and the Exploratorium (San Francisco, CA). At Yale, she is the director of the award-winning science lecture series for children called, Science Saturdays. She sits on the board of directors for the Connecticut Academy for Education.

See the attached article from the *Yale Scientific Magazine*.

FY 2009 EPSCoR Committee of Visitors Review

August 11-12, 2009

Room 320

AGENDA

Tuesday, August 11, 2009

| | | |
|----------|--|----------------------|
| 8:00 am | Welcome, Agenda Review, Introduction of COV Members and Staff | Henry N. Blount, III |
| 8:15 am | COV Briefing: Purpose, Process, and Expected Outcomes | W. Lance Haworth |
| 8:30 am | EPSCoR Program Briefing | Henry N. Blount, III |
| 9:30 am | Break | |
| 9:45 am | Charge to the COV | Henry N. Blount, III |
| 10:15 am | COV review materials (Closed Session) | COV Members |
| Noon | Lunch | |
| 1:00pm | COV review materials/report planning (Closed Session) | COV Members |
| 5:00pm | Adjourn | |

Wednesday, August 12, 2009

| | | |
|--------|--|-------------|
| 8:00am | Report Preparation (Closed Session) | COV Members |
| Noon | Lunch | |
| 1:00pm | Report Preparation (Closed Session) | COV Members |
| 2:00pm | Executive Session with EPSCoR Leadership | |
| 3:00pm | Finalize COV Report (Closed Session) | COV Members |
| 4:00pm | Presentation of COV Findings | |
| 5:00pm | Adjourn | |




Experimental Program to Stimulate Competitive Research (EPSCoR)

Committee of Visitors FY 2009 Review

August 11-12, 2009


1



NSF EPSCoR Update

- EPSCoR Characteristics & Context
- FY 2005 COV Review & Responses
- EPSCoR 2020 Workshop
- EPSCoR in Transition

2




EPSCoR's Origins

NSF's 1979 statutory authority "authorizes the Director to operate an Experimental Program to Stimulate Competitive Research (EPSCoR) to assist less competitive states that:

- Have historically received little federal R&D funding; and
- Have demonstrated a commitment to develop their research bases and improve science and engineering research and education programs at their universities and colleges."

3




EPSCoR Mission

To assist the National Science Foundation in its statutory function

" to strengthen research and education in science and engineering throughout the United States and to avoid undue concentration of such research and education."


4



EPSCoR Goals

- Provide strategic programs and opportunities that stimulate sustainable improvements in R&D capacity and competitiveness
- Advance S&E capabilities in EPSCoR jurisdictions for discovery, innovation, and overall knowledge-based prosperity

5



EPSCoR Objectives

- To catalyze key research themes
- To activate effective collaborations
- To broaden participation in S&E
- To use EPSCoR as a programmatic test bed

6



Bolsters capacity to

- Enhance discovery and learning through utilization of CI and other evolving technologies,
- Develop the diverse, well-prepared, internationally competent and globally engaged STEM workforce necessary to sustain the nation's competitive edge,

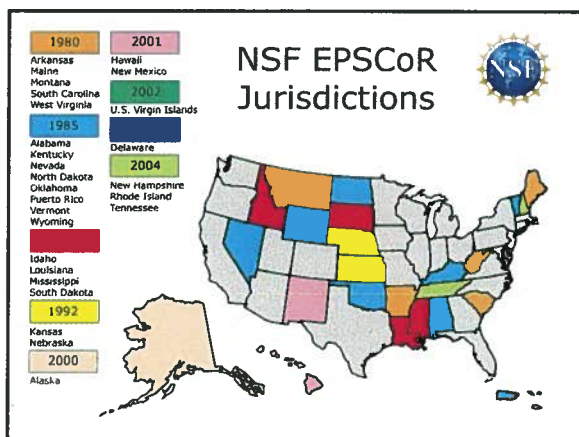
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Bolsters capacity to (+)

- Facilitate knowledge generation leading to economic development, and
- Expand the scientific literacy of all citizens, and disseminate to them the importance of STEM research and education.

8



EPSCoR Today

In the 27 EPSCoR jurisdictions:

- 20% of the nation's total population
- 25% of the research institutions
- 18% of the employed scientists and engineers

10



EPSCoR Today (+)

Also,

- 16% of the nation's African-Americans
- 26% of its American Indians and Alaskan Natives
- 20% of its Native Hawaiians and Pacific Islanders
- 13% of its Hispanics

11




EPSCoR Today (+)

As well as:

- 51 of the nation's 103 HBCUs (50%)
- 48 of the nation's 139 HSIs (35%)
- 22 of the nation's 32 TCUs (69%)

12




EPSCoR Today (+)

These same 27 EPSCoR jurisdictions:

- Submit ~13% of the proposals received by the Foundation
- Receive ~10% of all NSF research funding

13



NSF Proposals and Awards: FY99 – FY08

| | Number of Proposals | % of Proposals | Number of Awards | % of Awards | Number of Dollars | % of Dollars | Funding Rate | NSF Funds (USD) | NSF Research (USD) | NSF Research (USD % of NS) |
|---------------------|---------------------|----------------|------------------|-------------|-------------------|--------------|--------------|-----------------|--------------------|----------------------------|
| Total | 4,081 | 100% | 1,351 | 100% | 3,326 | 100% | 20% | 466,119 | 206,223 | 11% |
| EPSCoR | 4,744 | 100% | 1,408 | 100% | 3,326 | 100% | 20% | 466,119 | 206,223 | 11% |
| 2009 | 5,172 | 100% | 1,608 | 100% | 3,602 | 100% | 20% | 500,780 | 270,611 | 11% |
| 2008 | 5,671 | 100% | 1,811 | 100% | 3,860 | 100% | 21% | 544,302 | 303,493 | 12% |
| 2007 | 5,598 | 100% | 1,804 | 100% | 3,794 | 100% | 20% | 548,622 | 295,872 | 10% |
| 2006 | 5,785 | 100% | 1,845 | 100% | 3,940 | 100% | 21% | 588,100 | 326,147 | 12% |
| 2005 | 5,781 | 100% | 1,839 | 100% | 3,944 | 100% | 21% | 593,687 | 314,189 | 10% |
| 2004 | 5,616 | 100% | 1,888 | 100% | 3,727 | 100% | 21% | 596,115 | 309,482 | 9% |
| 2003 | 5,706 | 100% | 1,868 | 100% | 3,838 | 100% | 21% | 578,496 | 322,878 | 10% |
| 2002 | 5,848 | 100% | 1,894 | 100% | 3,954 | 100% | 21% | 602,181 | 345,208 | 12% |
| Total EPSCoR | 23,807 | 64% | 7,745 | 57% | 15,062 | 45% | 20% | 3,001,748 | 1,650,892 | 55% |
| 2009 | 24,963 | 64% | 8,384 | 57% | 16,218 | 45% | 20% | 3,222,567 | 1,760,876 | 55% |
| 2008 | 26,574 | 64% | 8,508 | 57% | 16,848 | 45% | 21% | 3,729,432 | 2,073,808 | 55% |
| 2007 | 26,811 | 64% | 8,828 | 57% | 17,023 | 45% | 20% | 4,011,267 | 2,222,455 | 55% |
| 2006 | 28,695 | 64% | 9,230 | 57% | 18,464 | 45% | 21% | 4,529,224 | 2,478,601 | 55% |
| 2005 | 27,032 | 64% | 8,812 | 57% | 17,101 | 45% | 20% | 4,753,114 | 2,603,601 | 55% |
| 2004 | 28,695 | 64% | 9,230 | 57% | 18,464 | 45% | 21% | 4,529,224 | 2,478,601 | 55% |
| 2003 | 28,695 | 64% | 9,230 | 57% | 18,464 | 45% | 21% | 4,529,224 | 2,478,601 | 55% |
| 2002 | 28,695 | 64% | 9,230 | 57% | 18,464 | 45% | 21% | 4,529,224 | 2,478,601 | 55% |
| 2001 | 27,032 | 64% | 8,812 | 57% | 17,101 | 45% | 20% | 4,753,114 | 2,603,601 | 55% |
| 2000 | 27,032 | 64% | 8,812 | 57% | 17,101 | 45% | 20% | 4,753,114 | 2,603,601 | 55% |
| Total NSF | 20,488 | 100% | 6,100 | 100% | 15,388 | 100% | 26% | 3,818,000 | 2,809,212 | 74% |
| 2009 | 20,427 | 100% | 6,100 | 100% | 15,322 | 100% | 26% | 3,787,882 | 2,807,820 | 74% |
| 2008 | 21,446 | 100% | 6,400 | 100% | 15,046 | 100% | 27% | 4,200,000 | 3,243,000 | 77% |
| 2007 | 20,488 | 100% | 6,100 | 100% | 15,388 | 100% | 26% | 3,818,000 | 2,809,212 | 74% |
| 2006 | 20,488 | 100% | 6,100 | 100% | 15,388 | 100% | 26% | 3,818,000 | 2,809,212 | 74% |
| 2005 | 20,488 | 100% | 6,100 | 100% | 15,388 | 100% | 26% | 3,818,000 | 2,809,212 | 74% |
| 2004 | 20,488 | 100% | 6,100 | 100% | 15,388 | 100% | 26% | 3,818,000 | 2,809,212 | 74% |
| 2003 | 20,488 | 100% | 6,100 | 100% | 15,388 | 100% | 26% | 3,818,000 | 2,809,212 | 74% |
| 2002 | 20,488 | 100% | 6,100 | 100% | 15,388 | 100% | 26% | 3,818,000 | 2,809,212 | 74% |
| 2001 | 20,488 | 100% | 6,100 | 100% | 15,388 | 100% | 26% | 3,818,000 | 2,809,212 | 74% |
| 2000 | 20,488 | 100% | 6,100 | 100% | 15,388 | 100% | 26% | 3,818,000 | 2,809,212 | 74% |


14



NSF EPSCoR Updates

- Eligibility
- Staffing
- Portfolio Activity
 - Research Infrastructure Improvement
 - ✓ RII Track-1
 - ✓ RII Track-2
 - ✓ RII C2
 - Co-Funding
 - Outreach and Workshops
- Budget Outlook and Planning

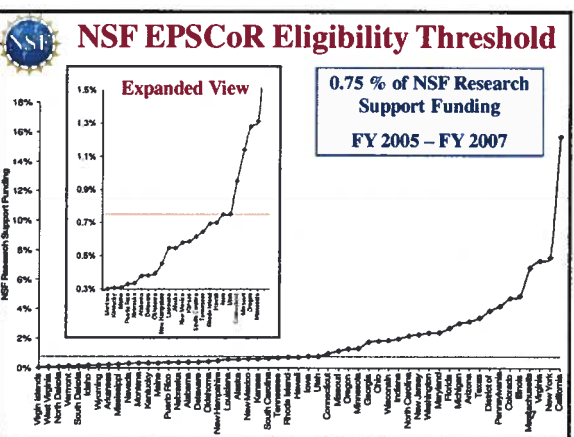
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NSF Research Support Funding FY 2005 - 2007

| STATE | FY 2005 | FY 2006 | FY 2007 | FY 2008 | % of Total |
|----------------------|-------------|-------------|-------------|-------------|------------|
| Total | \$4,997,399 | \$5,000,000 | \$5,000,000 | \$5,000,000 | 100.00% |
| Alabama | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Alaska | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Arizona | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Arkansas | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| California | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Colorado | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Connecticut | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Delaware | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| District of Columbia | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Florida | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Georgia | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Hawaii | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Idaho | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Illinois | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Indiana | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Iowa | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
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| Nebraska | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Nevada | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| New Hampshire | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| New Jersey | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| New Mexico | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| New York | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| North Carolina | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| North Dakota | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Ohio | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Oklahoma | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Oregon | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Pennsylvania | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Rhode Island | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| South Carolina | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| South Dakota | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Tennessee | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Texas | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Utah | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Vermont | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Virginia | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Washington | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| West Virginia | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Wisconsin | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |
| Wyoming | \$49,999 | \$49,999 | \$49,999 | \$49,999 | 1.00% |

16





NSF EPSCoR Updates


- Eligibility
- Staffing
- Portfolio Activity
 - Research Infrastructure Improvement
 - ✓ RII Track-1
 - ✓ RII Track-2
 - ✓ RII C2
 - Co-Funding
 - Outreach and Workshops
- Budget Outlook and Planning

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 **NSF EPSCoR Staff**



19

 **Jurisdiction Responsibilities**

| Denise Barnes | Arlene Garrison | John Hall | Maija Kukla | Uma Venkates'n |
|---------------|-----------------|-----------|-------------|----------------|
| Alabama | Idaho | Arkansas | Delaware | Alaska |
| Hawaii | Mississippi | Maine | Kentucky | Kansas |
| Iowa | Nevada | Montana | Louisiana | N Hampshire |
| Utah | New Mexico | N Dakota | Nebraska | Puerto Rico |
| | | S Dakota | Oklahoma | Rhode Island |
| | | Virgin Is | S Carolina | Tennessee |
| | | Wyoming | W Virginia | Vermont |

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 **NSF EPSCoR Updates**

- Eligibility
- Staffing
- **Portfolio Activity**
 - Research Infrastructure Improvement
 - ✓ RII Track-1
 - ✓ RII Track-2
 - ✓ RII C2
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21

 **EPSCoR Investment Tools for Capacity Building**


- **Research Infrastructure Improvement Awards (RII)**
 - **Track-1:** Up to 5 years and \$20M to jurisdictions to improve physical and human infrastructure critical to R&D competitiveness in priority research areas. (NSF 09-570)

22

 **EPSCoR Investment Tools for Capacity Building**

- **Research Infrastructure Improvement Awards (RII)**
 - **Track-2:** Up to 3 years and \$6M to consortia of jurisdictions to support innovation-enabling cyberinfrastructure of regional, thematic, or technological importance. (NSF 09-571)

23

 **EPSCoR Investment Tools for Capacity Building**

- **Research Infrastructure Improvement Awards (RII)**
 - **Cyber Connectivity (C2):** Up to 2 years and \$1M to support the enhancement of inter-campus and intra-campus cyber connectivity and broadband access within an EPSCoR jurisdiction. (NSF 09-569)

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RII Proposals Require

Research Program: SCIENCE FIRST + Plus

- Diversity Plan
- Workforce Development Plan
- Cyberinfrastructure Plan
- External Engagement Plan
- Evaluation and Assessment Plan
- Sustainability Plan
- Management Plan

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RII Awards

- Are Cooperative Agreements (Tracks 1&2)
- Have Individually Tailored Terms and Conditions
- Have Detailed Reporting Requirements for Assessment Purposes
- Require Post-award Strategic Planning
- Require Site Visits and Reverse Site Visits

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NSF EPSCoR Updates

- Eligibility
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- Portfolio Activity
 - Research Infrastructure Improvement
 - ✓ RII Track-1
 - ✓ RII Track-2
 - ✓ RII C2
 - **Co-Funding**
 - Outreach and Workshops
- Budget Outlook and Planning

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EPSCoR Investment Tools for Capacity Building

Co-Funding:

Joint support of research proposals submitted by EPSCoR researchers to non-EPSCoR NSF programs that have been merit reviewed and recommended for award, but could not be funded without the combined, leveraged support of EPSCoR and the Research and Education Directorates and Offices.

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Co-Funding Essentials

- Reviewed and Recommended for Funding within NSF Directorates and Offices
- Combined leveraged support necessary for funding
- Characteristics favoring Co-funding:
 - New PIs
 - Collaborative
 - Multidisciplinary
 - Synergistic
 - Broaden participation
 - Instrumentation
 - R/T Ops for St/Tchrs
 - Integration of R&E
- **Tipping Point is Financial!**

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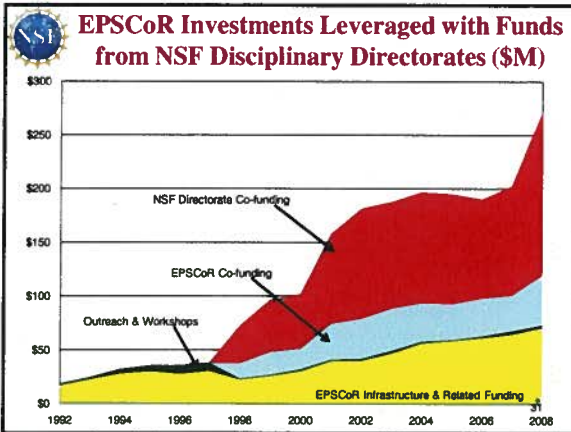


The Co-Funding "Yellow Sheet"

Plan for NSF Co-Funding Proposals, FY2012

| Directorate | Office | Program | Track | Priority | Review | Recommend | Fund | Co-Fund | Outreach | Workshops | Other |
|-------------|--------|---------|-------|----------|--------|-----------|------|---------|----------|-----------|-------|
| NSF | NSF | NSF | NSF | NSF | NSF | NSF | NSF | NSF | NSF | NSF | NSF |

See EPSCoR Co-Funding and Outreach Guidelines under TAB 12 in your COV Briefing Book.



EPSCoR Co-Funding (\$M)

| FY | EPS | Dir/Off | NSF Total | Leverage |
|-----------------|--------------|--------------|--------------|------------|
| 1999 | 21.5 | 26.4 | 47.9 | 2.2 |
| 2000 | 19.6 | 30.4 | 50.0 | 2.6 |
| 2001 | 33.7 | 49.1 | 82.8 | 2.5 |
| 2002 | 37.7 | 64.2 | 101.9 | 2.7 |
| 2003 | 39.7 | 58.7 | 98.4 | 2.5 |
| 2004 | 36.2 | 66.2 | 102.4 | 2.8 |
| 2005 | 33.7 | 67.7 | 101.4 | 3.0 |
| 2006 | 36.4 | 56.1 | 91.5 | 2.6 |
| 2007 | 36.2 | 67.4 | 101.0 | 3.0 |
| 2008 | 46.7 | 104.4 | 151.1 | 3.2 |
| FY 99-08 | 341.4 | 590.6 | 932.0 | 2.7 |

Funding by Dir/Off FY04 – FY08 (\$M)

| Co-Funding | | | | Dir/Off Only | |
|---------------|--------------|--------------|--------------|----------------|----------------|
| Dir/Off | EPS | Dir/Off | Total | Only | NSF Total |
| BIO | 27.4 | 42.6 | 70.0 | 432.7 | 460.0 |
| CISE | 17.2 | 22.8 | 39.9 | 139.8 | 157.0 |
| EHR | 17.3 | 49.0 | 66.3 | 983.3 | 1,000.6 |
| ENG | 43.2 | 63.8 | 107.1 | 299.3 | 342.6 |
| GEO | 17.1 | 30.7 | 47.8 | 351.8 | 368.9 |
| MPS | 43.1 | 58.1 | 101.2 | 414.7 | 457.9 |
| SBE | 7.9 | 8.8 | 16.7 | 82.1 | 90.0 |
| OCI | 2.4 | 3.6 | 6.0 | 115.8 | 118.2 |
| OISE | 2.3 | 11.6 | 13.9 | 13.1 | 15.3 |
| OPP | 3.0 | 5.4 | 8.4 | 245.6 | 248.6 |
| Totals | 180.9 | 296.5 | 477.4 | 3,078.2 | 3,259.4 |

FY08 Co-Funding by Award Type (\$M)

| Type | EPSCoR | NSF Tot | Type | EPSCoR | NSF Tot |
|---------|--------|---------|----------------|--------------|---------------|
| IIA | 14.77 | 32.48 | Math | 1.56 | 9.83 |
| CAREER | 5.44 | 11.28 | RUI | 0.79 | 1.79 |
| HR Dev | 5.44 | 41.14 | ATE | 0.68 | 2.63 |
| Collabs | 5.19 | 12.49 | GOALI | 0.54 | 1.25 |
| Centers | 4.61 | 19.00 | INT | 0.36 | 0.73 |
| Cyber | 2.96 | 8.40 | CCLI | 0.20 | 0.40 |
| MRI | 2.02 | 5.32 | RET | 0.19 | 0.50 |
| REU | 1.99 | 3.88 | Totals: | 46.74 | 151.11 |

HR Dev: GK-12; HBCU-UP; TCUP; URM; etc
Cyber: OCI; CDI

FY08 Co-Funding by Jurisdiction (\$M)

| JD | Num | EPSCoR | NSF Tot | JD | Num | EPSCoR | NSF Tot |
|----|-----|--------|---------|----|-----|--------|---------|
| AK | 6 | 1.28 | 6.46 | LA | 21 | 3.56 | 13.81 |
| AL | 30 | 3.50 | 7.93 | ME | 16 | 2.19 | 7.68 |
| AR | 6 | 0.70 | 3.26 | MS | 13 | 3.03 | 18.65 |
| DE | 11 | 1.74 | 3.72 | MT | 14 | 1.78 | 4.68 |
| HI | 12 | 1.39 | 7.07 | ND | 8 | 1.77 | 7.16 |
| ID | 10 | 1.25 | 2.66 | NE | 8 | 3.45 | 9.59 |
| KS | 17 | 2.74 | 7.57 | NH | 10 | 0.91 | 2.10 |
| KY | 9 | 1.20 | 2.41 | NM | 15 | 2.10 | 5.71 |

FY08 Co-Funding by Jurisdiction (\$M)
- continued -

| JD | Num | EPSCoR | NSF Tot | JD | Num | EPSCoR | NSF Tot |
|----|-----|--------|---------|------------|------------|--------------|---------------|
| NV | 8 | 0.98 | 2.26 | TN | 31 | 4.10 | 11.27 |
| OK | 11 | 1.87 | 6.53 | VI | 0 | 0 | 0 |
| PR | 5 | 1.12 | 3.52 | VT | 4 | 0.61 | 1.22 |
| RI | 5 | 0.95 | 2.17 | WV | 7 | 0.81 | 1.87 |
| SC | 15 | 1.90 | 6.64 | WY | 2 | 0.32 | 1.07 |
| SD | 5 | 1.54 | 4.10 | Tot | 299 | 46.74 | 151.11 |

NSF EPSCoR Updates

- Eligibility
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 - ✓ RII Track-2
 - ✓ RII C2
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EPSCoR Investment Tools for Capacity Building

Outreach & Workshops

Support of outreach activities by NSF disciplinary and professional staff; Support of strategic planning and capacity-building workshops. (NSF 06-613)

38

NSF Outreach Investments FY05-FY08

| Fiscal Year | EPSCoR Investment (\$) | Person-Trips |
|-------------|------------------------|--------------|
| 2005 | 111,310 | 108 |
| 2006 | 83,920 | 78 |
| 2007 | 98,168 | 85 |
| 2008 | 183,878 | 110 |

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NSF Workshops: Community Catalysis

40

NSF EPSCoR Updates

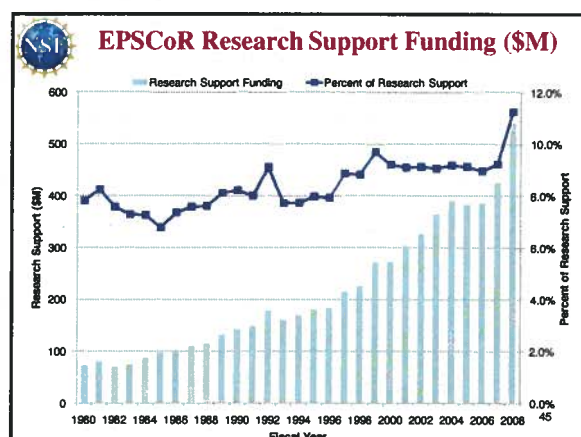
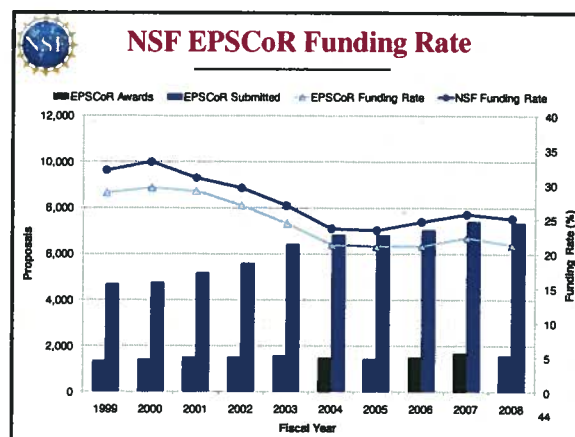
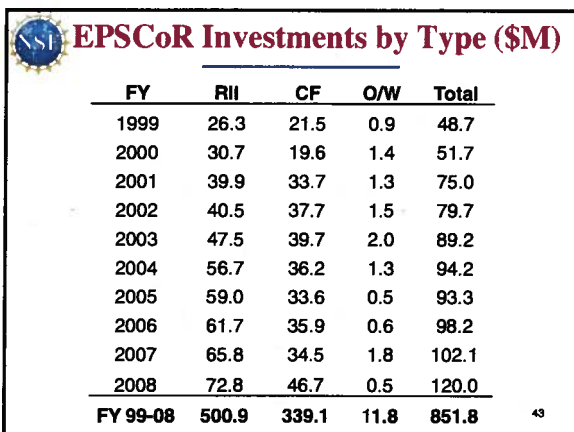
- Eligibility
- Staffing
- Portfolio Activity
 - Research Infrastructure Improvement
 - ✓ RII Track-1
 - ✓ RII Track-2
 - ✓ RII C2
 - Co-Funding
 - Outreach and Workshops
- Budget Outlook and Planning

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NSF Funding to EPSCoR Jurisdictions (\$M)

| FY | EPS | Non EPS | NSF Total |
|-----------------|--------------|----------------|----------------|
| 1999 | 48.7 | 406.4 | 455.1 |
| 2000 | 51.7 | 433.6 | 485.3 |
| 2001 | 75.0 | 515.8 | 590.8 |
| 2002 | 79.7 | 508.5 | 588.2 |
| 2003 | 89.2 | 559.4 | 648.6 |
| 2004 | 94.2 | 573.9 | 668.1 |
| 2005 | 93.4 | 543.5 | 636.9 |
| 2006 | 98.2 | 540.4 | 638.6 |
| 2007 | 102.1 | 616.9 | 719.0 |
| 2008 | 120.0 | 572.2 | 692.2 |
| FY 99-08 | 852.2 | 5,270.6 | 6,122.8 |

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NSF EPSCoR Funding (\$M)

| Activity | FY05 Actual | FY06 Actual | FY07 Actual | FY08 Actual | FY09 C Plan | FY10 Req |
|--------------------|-------------|-------------|--------------|---------------|--------------|--------------|
| RII | 59.0 | 61.7 | 65.8 | 72.8 | 91.5 | 114.4 |
| Co-Fund | 33.6 | 35.9 | 34.5 | 46.7 | 40.0 | 31.2 |
| Outreach Workshops | 0.7 | 0.6 | 1.8 | 0.5 | 1.5 | 1.5 |
| Total | 93.3 | 98.2 | 102.1 | *120.0 | 133.0 | 147.1 |

* includes \$5M in Supplemental Funding

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NSF FY 2005 EPSCoR COV

- July 26-27, 2005
- Examined FY 2000 – FY 2004 EPSCoR Actions
- Committee Roster



| | |
|--------------------|------------------------------|
| Chris Busch | Consultant (MT) |
| Michael Doyle | University of Maryland (MD) |
| Norman Fortenberry | National Academy of Eng (DC) |
| Sally Mason | Purdue University (IN) |
| Kerri Vierling | University of Idaho (ID) |

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NSF 2005 COV Recommendations

- EPSCoR Staff S&T Credentials and Skills
- EPSCoR Advisory Committee
- “Competitiveness” Building
- Review of RII Proposals
- Documentation of Co-Funding Actions
- Program Planning and Implementation
- Evaluation and Measurement
- Reviewer Ethnicity
- Focused Activities and Engaged Jurisdictions
- Planning Grants

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EPSCoR 2020 WORKSHOP REPORT


EPSCoR 2020: Expanding State Participation in Research in the 21st Century – A New Vision for the Experimental Program to Stimulate Competitive Research (EPSCoR)

A report to the
National Science Foundation

August 2006

Prepared by Jerome D. Odom, Ph.D.
Principal Investigator: NSF Award # 0630747

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EPSCoR 2020: Strategic Priority 1

Provide more flexible EPSCoR Research Infrastructure Improvement (RII) awards that focus foremost on building infrastructure to do basic competitive research.

Awards should have a duration of up to five years, with an award range of \$3-\$5 million per year, per state.


50



EPSCoR 2020: Strategic Priority 2

Emphasize the imperative for a more geographical dispersion of funding by infusing EPSCoR goals into all of the NSF's programs and initiatives.


51



EPSCoR 2020: Strategic Priority 3

Revitalize and extend other components of EPSCoR


52



EPSCoR 2020: Strategic Priority 4

Restore the 'Experimental' nature of EPSCoR by using it as a test bed for new strategies.

53



EPSCoR 2020: Strategic Priority 5

Develop 'State Strategic S&T Business Plans' for state EPSCoR programs, where appropriate.

54



EPSCoR 2020: Strategic Priority 6

A recommendation for all: Create a shared understanding and definition of success.

55



America COMPETES Act

Responding to Section 7020 of the Act, NSF is working with community partners to:

- Identify the scientific research requirements of broadband access, and
- Assess the current status of such broadband access at research institutions in EPSCoR-eligible states, at Institutions in rural areas, and at minority serving Institutions
- Report due to Congress in Fall 2008

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EPSCoR In Transition

- EPSCoR's move to OIA in the Director's Office *raises its visibility* and underlines the need for
 - Sharper research focus
 - Stronger integration across Foundation
- Increase EPSCoR competitiveness through
 - Increased co-funding
 - EPSCoR participation in NSF initiatives
 - Alignment of RII-supported S&E with discovery frontiers in Directorates and Offices across NSF
 - Catalyzing new, effective interactions

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Challenges at the Frontier

- Cyber-Enabled Research and Innovation (CDI)
- Deep Underground Science and Engineering Laboratory (DUSEL)
- National Ecological Observatory Network (NEON)
- Alaska Region Research Vessel (ARRV)

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NSF-wide Investments FY2009

<http://www.nsf.gov/about/budget/fy2009/index.jsp>

- Cyber-enabled Discovery and Innovation
- Science and Engineering "Beyond Moore's Law"
- Adaptive Systems Technology
- Dynamics of Water Processes in the Environment

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A More Effective EPSCoR

EPSCoR Science & Engineering Group

- Strategic input from Directorates and Offices to shape the Foundation's vision for EPSCoR and to help implement that vision
- Strong disciplinary expertise and guidance
- Raise level/broaden scope of interactions
- Ensure excellence and breadth of impact of EPSCoR science and engineering activities

60

EPSCoR Science and Engineering Group

| | | |
|-------------------------------|---|------------------------|
| John Byers BIO/IOS | Teresa Davies OD/OLPA | José Muñoz OD/OCI |
| Margaret Cavanaugh GEO/OAD | Darren Dutterer ENG/OAD | Mark Suskin OD/OISE |
| Fahmida Chowdhury SBE/OAD | Celeste Rohlfing MPS/DMR | Julie Palais OD/OPP |
| Deborah Crawford CISE/OAD |  | Wanda Ward EHR/OAD |

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The EPSCoR – OCI Interface

- Shared goals – capacity building
- Common commitments to learning and workforce development
- Very strong commitments to broadening participation
- Alignment with Discovery Science across NSF
- Partnerships across NSF and with other stakeholders to address EPSCoR CI

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EPSCoR Interagency Coordinating Committee

- National Science Foundation, Chair
- Department of Agriculture
- Environmental Protection Agency
- National Aeronautics and Space Administration
- Department of Energy
- National Institutes of Health
- Department of Defense

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EPSCoR Impacts



Old Town Fuel and Fiber is run out of a converted paper mill.

- SC: High resolution in-vivo brain imaging
- SD: RII tools led to \$13 M in new awards and new graduate degree programs
- ME: Old Town Fuel and Fiber – new jobs
- MS: Advanced nanotech materials facility
- KS: Recruiting Native Americans in environmental sciences
- HI: Global wireless distributed network

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EPSCoR: Hawaii

- Ecosystem Sustainability
 - Understanding and predicting how invasive species, anthropogenic activities, and climate change impact biodiversity, ecosystem function and use of Hawaiian endemic species
- Compelling Elements:
 - A vibrant indigenous understanding, perspective, and history of the islands is embedded in the research, education, and outreach components
 - Clearly shows how science can be of service to protecting quality of life; could contribute to understanding the impacts of human activities on tropical ecosystems world-wide
- Participants:
 - University of Hawaii System (Manoa, Hilo, Kapiolani Community College)
 - Chaminade University (Private Institution)



65




EPSCoR: Kansas


- Climate Change and Energy: Basic Science, impacts, and Mitigation
- Compelling Elements:
 - Innovative workforce development plan, excellent integration of research and education
 - Broad-based integrated approach to issues of climate change and energy use and management, emphasizing the integration of natural and social sciences
- Participants:
 - Four universities: KSU, KU, Wichita State University, and Haskell Indian Nations University;
 - Two economic growth organizations: KTEC (Kansas Technology Enterprise Corporation) and KBA (Kansas Bioscience Authority);
 - Four Kansas-based companies: Abengoa Bioenergy, MGP Ingredients, White Energy, and Nanoscale; and
 - Two companies outside of Kansas: ADM (IL) and Netcrystals (CA)



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EPSCoR: Maine




Advanced Engineer of Wood Composites (AEWC)

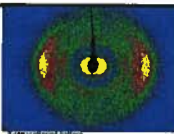
- **Sustainability Science**
 - Expand capacity to understand and respond to sustainability challenges; coupled dynamics of social-ecological-systems (SES) and the use of SES in decision-making
- **Compelling Elements:**
 - Potentially transformative, high integration of natural and social science; model for sustainability research that could be adapted for other ecologically sensitive systems
 - Engagement of Native Americans to foster better stewardship of tribal lands; strong mentoring program for new faculty
- **Participants:**
 - University of Maine System (Seven Institutions); University of New England
 - Bates, Bowdoin, Colby (Private), Unity, College of the Atlantic



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EPSCoR: Mississippi




Early seedling studies
Stretched Dufrenoy test cell membrane.

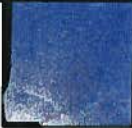
- **Modeling and Simulation of Biological Systems**
 - To advance understanding of complex biological systems and networks; and the understanding of the effects of nanoparticles on specific functions of biological systems
- **Compelling Elements:**
 - Focuses on biological systems of critical importance for human health, food safety, biosecurity, and the environment
 - Tight integration of computational efforts across the state
- **Participants:**
 - Univ. of Mississippi, Mississippi State Univ., Jackson State Univ. (HBCU), Univ. of Southern Mississippi, Univ. of Mississippi Medical Center
 - Mississippi College (PUI)



Participants discuss incorporating a green fluorescent protein into bacteria.



EPSCoR: South Carolina



Biofabrication


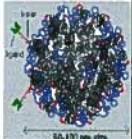
- Computer-aided, layer-by-layer deposition of bio-material with the purpose of engineering functional 3D tissues and organs


Compelling Elements:

- Highly innovative, may lead to large scale industrial biofabrication of human tissues and organs and create a new biofabrication industry
- Broad institutional engagement; inclusive manner of the selection process by which the research idea was chosen


Participants:

- Clemson University, MUSC, USC (Doctoral), Claflin Univ., South Carolina State Univ., Voorhees College (HBCU), Furman University, University of South Carolina-Beaufort (PUI), Denmark Technical College, Greenville Technical College (Two Year Colleges)






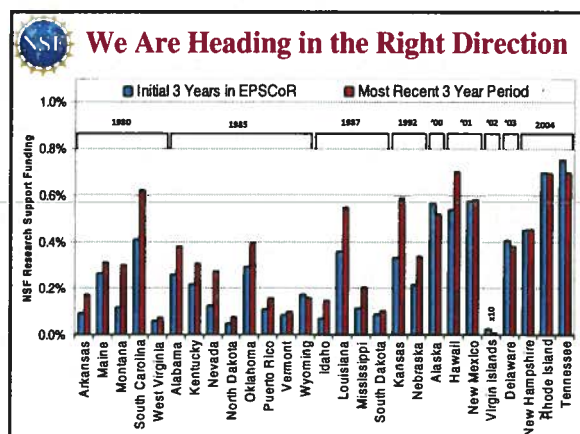


EPSCoR: South Dakota



- **Photoactive Nanomaterials and Devices for Energy Applications**
- **Compelling Elements:**
 - Close connection to the state S&T plan
 - Workforce development
 - innovative model for Tribal College faculty development
- **Participants:** Nine academic institutions
 - South Dakota State University, South Dakota School of Mines and Technology, University of South Dakota (Doctoral)
 - Augustana College, Black Hills State University, Dakota State University (PUI)
 - Oglala Lakota College, Sinte Gleska University, Sisseton Wahpeton College (Tribal Colleges and Universities)





EPSCoR -

Good Progress

Significant Challenges

Outstanding Opportunities

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Charge to the NSF EPSCoR Committee of Visitors

August 2009

By NSF policy, each program that awards grants and/or cooperative agreements is normally reviewed at regular intervals by a Committee of Visitors (COV) comprised of qualified external experts. The three major purposes of the COV are:

1. To assess the program's overall management and review processes that are used to arrive at decisions regarding proposals;
2. To provide constructive input regarding future plans for continuous improvement of the program toward attaining its mission, goals, and objectives; and
3. To prepare a written report that summarizes the COV's findings and recommendations.

Thus, the COV is charged with addressing and reporting on:

- The integrity, quality, and efficacy of the processes used to solicit and review proposals as well as to recommend and document proposal actions, including such factors as:
 - Selection of an adequate number of highly qualified reviewers who are free from bias and/or conflicts of interest;
 - Appropriate use of NSF and EPSCoR merit review criteria;
 - Preparation and maintenance of adequate documentation related to program officers' recommendations on proposal awards and declines.
 - The Office's management of awarded projects, including such factors as:
 - Monitoring of project progress and spending by an appropriate combination of communication-based interactions and annual reports;
-
- The technical and fiscal expertise of the program staff;
 - The balance of awards in terms of the program's goals and objectives.
- The relationship between the program's strategic mission and its investment portfolio that is designed to address that mission.
 - The Office's response to the prior COV report of 2005.

- The Office's strategic plans for future programmatic directions and corresponding outcomes.
- Other relevant issues that the COV feels are critical to the review of the EPSCoR program and its continuing positive impacts on the EPSCoR community's competitiveness. These impacted areas include scientific research, infrastructure building, broadening participation, workforce development, and innovation.

The EPSCoR COV is charged with using the NSF Core Questions and Report Template for 2009 in preparing its report.

August 24, 2009

Dr. W. Lance Haworth
Director
Office of Integrated Activities
National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230

Dear Dr. Haworth:

Because you were on travel when the EPSCoR COV discussed our findings with the staff, I am providing a summary of our substantive findings below. Should you have questions or require additional information, please feel free to contact me via email or phone (404-385-2265). Please note that the COV has signed off on the report which was transmitted electronically on August 24, 2009. I would be remiss in my role as Chair if I did not commend the COV members for their thorough and thoughtful reviews. They went beyond the sampling of the three funding mechanisms to call for documentation that was missing from some of the ejackets as well as requested additional information on awards and declinations. The review process was further enhanced by electronic posting of the materials prior to the COV meeting. All COV members were thoroughly familiar with the material prior to beginning the review process on August 11.

Response to the 2005 COV and 2020 Workshop

The COV finds that the Program has sufficiently addressed all of the recommendations in the last COV Report (2005). Having the benefit of a member of the previous COV on this year's committee was very effective and provided "institutional memory" and continuity that provided context to the progress achieved and the great degree of responsiveness to past suggestions. The COV suggests that the next review be conducted in similar fashion and that every effort be made to include a member from this COV on the next EPSCoR review. Indeed, the progress made in the wake of the previous review has been impressive and is a testimony to how serious the leadership is about continuous progress and improvement in the program itself and the service that the Foundation provides to the country overall.

The COV finds no gaps or program areas in need of improvement. The COV felt that the EPSCoR program utilized an excellent and diverse group of reviewers representing both EPSCoR and non-EPSCoR institutions. The COV recognizes that this aspect of the Program has significantly improved since the 2005 COV. Since the 2008 RII competition, the Program has collected and reported in its review analyses more detailed demographic and disciplinary data of reviewers.

The COV commends the Program for its responsiveness to the EPSCoR 2020 Workshop Report and encourages the Program to continue to focus on the strategic priorities outlined in the Report.

Management

Three key events have led to significant improvements in Program image, quality and overall management. First, the current leadership team is respected and responsive. Second, the Vision 2020 committee report laid out critical pathways for the Program's growth and development and these pathways have been, by and large, followed. Finally, the shift from EHR to OIA allows the Program to enjoy greater internal visibility and credibility, which has resulted in the further recruitment of strong talent to lead and manage the program.

The EPSCoR Director strives for transparency and does a good job in achieving it. A talented and respected staff has been assembled, and responsibilities have been delegated appropriately. The management of the Program is now thoughtful, orderly, and of high caliber. Moving from EHR to OIA has also provided appropriate oversight from the highest levels of the Foundation.

Planning and prioritizing for the Program have shifted from a top-down and opaque to a bottom-up, transparent process. The EPSCoR Director and staff are trusted and respected both internally and externally. The use of committees in consultative ways has greatly strengthened the ability of the Program to leverage EPSCoR dollars and co-funding opportunities have grown. Goals and objectives are clearly stated, jurisdictions and PIs are given excellent and timely feedback, and funding for all initiatives continues to grow. The leadership is wise to keep the initiatives within the program well-focused in three areas (infrastructure development, co-funding and workshops), which allows for effective oversight and management of the activities by a modest-sized staff. This clearly conveys the desire to provide good service while maximizing the funding that can be distributed to the jurisdictions.

The Program responds promptly to opportunities that maximize the combination of research and education innovations, particularly as they relate to individual jurisdictions and the strengths within respective jurisdictions. Management is well attuned to the capacity for jurisdictions to engage in cutting edge innovation, and supports and encourages efforts to grow and expand infrastructure and workforce capacity. Moreover, the COV applauds the efforts of management to be attuned to the economic development

capacities within jurisdictions and to link assessment and goal setting to the educational and research opportunities that also strategically expand economic development.

National Priorities

Relationships across all directorates at the Foundation appear to be strong. As a result, co-funding opportunities have continued to grow. The COV suggests that building strong relationships internally and appropriately developing those with other federal agencies has been done well by the management team and should continue to be a priority moving forward. The COV strongly encourages continued efforts to identify common national research priorities for promoting collaborations on EPSCoR programs with other federal mission agencies.

Promising Practices

The COV commends the Program for collaborating with research directorates to sponsor highly successful workshops, such as the one on water issues. Similarly, the COV believes recognition by the Foundation of the connectivity of energy, water and environmental issues presents a unique opportunity for broad engagement of the research directorates by EPSCoR.

Recommendations

- EPSCoR management is encouraged to continue to work with jurisdictions to track and analyze outcome data related to the success and retention of scientists, postdocs and students supported with EPSCoR funding, including those supported by grants that have been closed for some time. The EPSCoR program invests heavily in developing talent in EPSCoR jurisdictions through activities associated with RII awards and with co-funding. It can take longer than the duration of an RII or CAREER award to determine the outcome of such investments. For example, sufficient time has passed to evaluate the impacts on the success, retention, and contribution to jurisdictional science and technology efforts of junior faculty who received the first co-funded CAREER awards. Understanding the relationship of EPSCoR investments in people to the relative success of those researchers, and the likelihood that those researchers are retained, could be useful in the evolution of strategies that maximize the development and retention of scientific talent in EPSCoR jurisdictions.

Additionally, the scientific impacts of EPSCoR investment in research infrastructure can take years beyond the original investment before they come to fruition. EPSCoR management should work with jurisdictions to systematically capture major scientific advances that arise as a result of a foundation built by EPSCoR investments, both to help articulate the importance of EPSCoR to quality science, and to use such advances as tools in understanding how to maximize the positive impacts of infrastructure investments.

- The COV noted a few cases where EPSCoR management proceeded to fund RII proposals that received relatively low reviewer ratings (e.g., several “fair” review scores) and were “not recommended” or “fund only if...” by the review panel. In these cases, PIs were asked to respond in detail to several questions and concerns posed by program officers. In general, the COV found the analysis of the reviews and the PI responses by program officers to be well done and the funding decision well justified. However, the COV recommends that EPSCoR use a systematic method or approach to document the assessment of the PI responses to reviewer concerns, particularly in cases where the review panel does not strongly support funding a proposal, but EPSCoR management decides to fund.
 - The COV commends the EPSCoR program for using well known, high quality reviewers from both EPSCoR jurisdictions and non-EPSCoR states. Usually, most reviewers are familiar with success rates in the research directorates as well as the type of review scores commonly associated with funding recommendations. In the cases mentioned above, some members of the COV were concerned that some reviewers might be somewhat put off upon learning that proposals were funded that had received relatively low review scores from the review panel on which they served. If so, this could serve to dampen the credibility of the EPSCoR program among the non-EPSCoR jurisdictional reviewer community. The COV recommends that EPSCoR management keep these concerns in mind when making a decision to fund a proposal that the original panel did not strongly support.
 - It is important for EPSCoR jurisdictions not be intellectually isolated from non-EPSCoR jurisdictions. Collaboration among scientists from EPSCoR and non-EPSCoR jurisdictions can leverage the scientific impact of EPSCoR investments as well as potentially create a better understanding of the quality of science in EPSCoR jurisdictions. Yet, the COV is sensitive to the importance of focusing EPSCoR funding in EPSCoR jurisdictions. The co-funding mechanism appears to be an attractive mechanism to facilitate collaborations among researchers from EPSCoR and non-EPSCoR jurisdictions because it can increase the probability of success of collaborative proposals by leveraging regular NSF program funds with support for the EPSCoR side of the collaboration. Such use of co-funding already occurs, and the COV recommends that EPSCoR management work to highlight this aspect of co-funding. EPSCoR management may also wish to consider working with the EPSCoR community to develop other mechanisms to foster collaborations among researchers from EPSCoR and non-EPSCoR jurisdictions.
-
- The innovative and potentially transformative nature of the RIIs varied by project. The COV feels that it is important to recognize that what is a transformative should be determined by particular characteristics of a given jurisdiction, instead of universal criteria.

Finally, the COV was particularly impressed with the quality of the analysis of both review criteria in the Panel Summaries and in the review analyses. The three parts of the review process (individual reviews, panel summaries, and review analyses) were integrated in a manner that provided strong checks and balances in the review process.

Respectfully submitted,

Willie Pearson, Jr.
Chair, EPSCoR 2009 COV

2009 EPSCoR Committee of Visitors (COV) Report

| | |
|--|--|
| Date of COV: | August 11-12, 2009 |
| Program/Cluster/Section: | |
| Division: | Experimental Program to Stimulate Competitive Research (EPSCoR) |
| Directorate: | Office of Integrative Activities |
| Number of actions reviewed: | Research Infrastructure Improvement (RII): 65 Co-Funded Actions (CFA): 20 Outreach and Workshops (O&W): 23 Total: 108 |
| Awards: | 96 (RII = 56; CFA = 20; O&W = 20) |
| Declinations: | 12 (RII = 9; O&W = 3) |
| Other: | 0 |
| Total number of actions within Program/Cluster/Division during period under review: | 1,483 |
| Awards: | 1,213 (RII = 115; CFA = 1,073; O&W = 25) |
| Declinations: | 270 (RII = 9; CFA = 258; O&W = 3) |
| Other: | 0 |
| Manner in which reviewed actions were selected: | <p>Lists of all 1,483 EPSCoR actions taken during the FY 2005 – FY 2008 period of this review were made available to COV members in advance of the meeting. All RII decision actions (65) and 23 O&W actions were made available to the Committee electronically through e-Jacket. The Chair, on behalf of the Committee, directed the staff to select 5 CFA actions for each of the four years under consideration for a total of 20 CFA actions. These 20, taken from the total pool of 1,331 CFA actions, reflected 20 different EPSCoR jurisdictions as well as all directorates and offices of the Foundation. These, too, were made available to the Committee through e-Jacket. In total, the Committee had immediate electronic (e-Jacket) access to documentation for 108 EPSCoR actions. For all Committee requests for records not among the 108 in e-Jacket, traditional hardcopy jackets were provided.</p> |

PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

A.1 Questions about the quality and effectiveness of the program's use of merit review process. Provide comments in the space below the question. Discuss areas of concern in the space provided.

| QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS | YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE ¹ |
|--|---|
| <p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p>The COV was pleased to see the appropriate use of ad hoc reviews of the technical areas in RII proposals in addition to panel reviews. The COV was also pleased to see that the number of reviews received for each proposal has significantly increased since the last COV in 2005.</p> | YES |
| <p>2. Are both merit review criteria addressed</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses?</p> <p>Comments:</p> <p>The COV was particularly impressed with the quality of the analysis of both review criteria in the Panel Summaries and in the review analyses. The three parts of the review process (individual reviews, panel summaries, and review analyses) were integrated in a manner that gave great checks and balances in the review process.</p> | <p>YES</p> <p>YES</p> <p>YES</p> |

¹ If "Not Applicable" please explain why in the "Comments" section.

| | |
|---|------------|
| <p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>The COV noted that the overall quality of the reviews was strong. Although the quality of individual reviews varied, the COV noted improvement in the individual reviews between 2005 and 2008.</p> | <p>YES</p> |
| <p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments:</p> <p>The COV was impressed with the excellent quality of the panel summaries. These summaries served as strong syntheses and appear to have captured the substantive dialogue of the panel discussions.</p> | <p>YES</p> |
| <p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments:</p> <p>The COV felt that the overall documentation for RII proposals was excellent, though we did note that a few key documents were missing (or not in the e-Jacket) for proposals awarded in FY 2005. Some of the co-funding jackets examined by the COV did not provide good documentation of why the EPSCoR office made the decision to provide co-funding. EPSCoR should examine whether the co-funding documentation could more closely match the quality and thoroughness of documentation of RII's.</p> | <p>YES</p> |

| | |
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| <p>6. Does the documentation to PI provide the rationale for the award/decline decision?</p> <p>(Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments:</p> <p>The COV felt that PIs are generally provided with sufficient information to support the rationale for the award decision. However, there was some concern that in cases where a RII proposal is funded, despite low reviews in specific areas, the PIs be made aware of the seriousness of the comments and that the EPSCoR office continue its practice of following up to ensure that the appropriate corrective actions are taken.</p> | <p>YES</p> |
| <p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later. The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments:</p> <p>The COV felt that the deadlines were very clear, timelines for processing proposals were met, and the staff was communicative.</p> | <p>YES</p> |
| <p>8. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> | |

A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.

| SELECTION OF REVIEWERS | YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE ² |
|--|--|
| <p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments:</p> <p>The COV felt that the appropriate use of <i>ad hoc</i> reviews in technical specialties was a significantly improved since the last review.</p> | YES |
| <p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Note: Demographic data is self reported, with only about 25% of reviewers reporting this information.</p> <p>Comments:</p> <p>The COV felt that the EPSCoR program used an excellent and diverse group of reviewers representing both EPSCoR and non-EPSCoR institution. The COV recognizes that this aspect of the program has significantly improved since the 2005 COV. Since the 2008 RII competition, the program reported detailed demographic and disciplinary data of reviewers in its review analyses.</p> | YES |
| <p>3. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments:</p> <p>The EPSCoR program has implemented well-structured processes for recognizing, resolving, and documenting conflicts-of-interest.</p> | YES |

² If "Not Applicable" please explain why in the "Comments" section.

4. Additional comments on reviewer selection:

A.3 Questions concerning the resulting portfolio of awards under review. Provide comments in the space below the question. Discuss areas of concern in the space provided.

| RESULTING PORTFOLIO OF AWARDS | APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE |
|---|---|
| <p>1. Overall quality of the research and/or education projects supported by the program.</p> <p>Comments:</p> <p>The COV felt that the quality of RII projects is high and improving.</p> | APPROPRIATE |
| <p>2. Does the program portfolio promote the integration of research and education?</p> <p>Comments:</p> <p>The program portfolio reflects strong, synergistic integration of research and education.</p> | APPROPRIATE |
| <p>3. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments:</p> <p>Consistent with the EPSCoR 2020 Workshop Report recommendations, RII award size and duration have increased.</p> | APPROPRIATE |

| | |
|---|--------------------|
| <p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Innovative/potentially transformative projects? <p>Comments:</p> <p>The innovative and potentially transformative nature of the RII's varied by project. The COV feels that it is important to recognize that what may be viewed as transformative needs to reflect jurisdictional context.</p> | <p>APPROPRIATE</p> |
| <p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Inter- and Multi- disciplinary projects? <p>Comments:</p> <p>Virtually all RII projects were multidisciplinary. The disciplinary scope of co-funded awards varied from individual research efforts to collaborative and group projects.</p> | <p>APPROPRIATE</p> |
| <p>6. Does the program portfolio have an appropriate balance among, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments:</p> <p>A broad spectrum of award size, duration, and type is reflected in the overall EPSCoR portfolio.</p> | <p>APPROPRIATE</p> |
| <p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Awards to new investigators? <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments:</p> <p>The COV felt that it was important that jurisdictions engage and support new and young investigators in their research activities. The COV felt that RII proposals should clearly articulate projected involvement of young investigators in RII activities.</p> <p>In co-funded actions, there is strong investment in CAREER awards.</p> | <p>APPROPRIATE</p> |

| | |
|--|--------------------|
| <p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Geographical distribution of Principal Investigators? <p>Comments:</p> <p>Principal investigators from all 27 EPSCoR jurisdictions are supported.</p> | <p>APPROPRIATE</p> |
| <p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> • Institutional types? <p>Comments:</p> <p>Diversity of institutions is a requirement of RII proposals. Co-funded investments in a broad spectrum of institutional types are evident.</p> | <p>APPROPRIATE</p> |
| <p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> • Across disciplines and sub disciplines of the activity? <p>Comments:</p> <p>There is evidence that the disciplinary reach of the EPSCoR program spans the intellectual breadth of Foundation programs.</p> | <p>APPROPRIATE</p> |
| <p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments:</p> <p>The EPSCoR portfolio shows thoughtful investment in underrepresented groups through RII, Co-Funding, and Outreach and Workshop mechanisms.</p> | <p>APPROPRIATE</p> |
| <p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments:</p> <p>The program is extremely relevant to and cognizant of national priorities, agency mission, relevant fields, and other constituents. Particularly, since the last COV, the program has responded to recommendations outlined in the following reports:</p> <p>National Science Foundation (2006). <i>Investing in America's Future: Strategic</i></p> | <p>APPROPRIATE</p> |

| | |
|---|--|
| <p><i>Plan FY 2006-2011</i>. Arlington, VA.: National Science Foundation. NSF 06-48.</p> <p>National Science Board (2005). <i>2020 Vision for the National Science Foundation</i>. Arlington, VA: National Science Board. NSB-05-142.</p> <p>Odom, J. D. (2006). <i>EPSCoR 2020 Workshop</i>. EPSCoR 2020 Workshop Report. Grant Report (OIA 06307).</p> <p>National Academies (2005). <i>Rising Above the Gathering Storm</i>. Washington, D.C.: National Academies Press.</p> <p>National Science Foundation (2007). <i>Cyberinfrastructure Vision for 21st Century Discovery</i>. Cyberinfrastructure Council. Arlington, VA: National Science Foundation. NSF 07-28.</p> <p>Franklin, S., Luker, M. and Sern, G. (2009). <i>National Science Foundation-Experimental Program to Stimulate Competitive Research (EPSCoR) Higher Education Bandwidth Networking Survey</i>. EDUCAUSE. Grant Report (EPS-0838100).</p> <p>Domestic Policy Council (2006). <i>American Competitiveness Initiative: Leading the World in Innovation</i>. Washington, D.C.: Office of Science and Technology Policy.</p> <p>Hart, G. and Rudman, W. (2001). <i>Road Map For National Security: Imperative for Change</i>. Hart-Rudman Report. Washington, D.C.: The United States Commission on National Security 21st Century.</p> | |
| <p>13. Additional comments on the quality of the projects or the balance of the portfolio:</p> | |

A.4 Management of the program under review. Please comment on:

1. Management of the program.

Comments:

The EPSCoR Director strives for transparency and does a good job in achieving it. A talented and respected staff has been assembled, and responsibilities have been delegated appropriately. The management of this program is now thoughtful, orderly, and of high caliber. Moving from EHR to OIA has also provided appropriate attention and oversight from the highest levels of the Foundation. Relations across the directorates of the Foundation appear to be strong. As a result, co-funding opportunities have continued to grow, leveraging EPSCoR dollars in significant ways. The COV finds that building strong relationships internally and appropriately growing those with other federal agencies has been done exceedingly well by the management team and should continue to be a priority.

2. Responsiveness of the program to emerging research and education opportunities.

Comments:

The program is promptly responsive to opportunities that take maximum advantage of the combination of research and education innovations, particularly as they are relevant to individual jurisdictions and the strengths within respective jurisdictions. Management is well attuned to the capacity for jurisdictions to engage in emerging trends and supports and encourages efforts to develop infrastructure and workforce capacity. Moreover, the COV applauds the efforts of management to be attuned to the economic development capacities within jurisdictions and to tie assessment and goal setting to the educational and research opportunities that also strategically expand economic development.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments:

Planning and prioritizing for this program have shifted from a somewhat top-down and opaque process to one that is bottom-up and transparent. The EPSCoR Director and staff are trusted and respected both internally and externally. The use of committees in consultative ways has greatly strengthened the ability to leverage EPSCoR dollars and co-funding opportunities have grown. Goals and objectives are clearly stated, jurisdictions and PIs are given excellent and timely feedback, and funding for all initiatives continues to grow. The leadership is wise to keep the initiatives within the program well-focused in three areas (infrastructure development, co-funding and workshops), which allows for effective oversight and management of the activities by a modest-sized staff. This clearly conveys the desire to provide exceptional service while maximizing the funding that can be distributed to the jurisdictions.

4. Responsiveness of program to previous COV comments and recommendations.

Comments:

All of the suggestions from the previous COV have been addressed. Having the benefit of a member of the previous COV on this year's committee was deemed highly desirable and provided "institutional memory" that brought context to the progress achieved and enthusiasm for the great degree of responsiveness to past suggestions. The COV suggests that the next review be conducted in similar fashion and that every effort be made to include a member from this COV on the next EPSCoR review. Indeed, the progress made in the wake of the previous review has been impressive and is a testimony to how serious the leadership is about continuous progress and improvement in the program itself and the service that the Foundation provides to the country overall.

5. Additional comments on program management:

Three key events have led to significant improvements in program image, quality and overall management. First, the current leadership team is respected and responsive. Second, the EPSCoR 2020 committee report laid out critical pathways for the program to grow and develop and these pathways have been, by and large, followed. Finally, the shift from EHR to OIA allows the program to enjoy greater internal visibility and credibility, which has further resulted in the recruitment of strong talent to lead and manage the program.

PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.

B.1 OUTCOME GOAL for Discovery: *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."*

Example #1-RII

| | |
|----------------------------|---|
| Title: | Research Infrastructure for Nevada's Growth - Targeting Research with Uniqueness and Excellence |
| Award Number: | 0447416 |
| PI: | Dana, Gayle L |
| Institution: | Nevada System of Higher Education |
| Type: | RII |
| Rating: | E, E, VG, VG, VG |
| Intellectual Merit: | This proposal seeks to build infrastructure in three new focal areas: (1) environmental processes in arid soils, (2) sensor technology, and (3) cognitive information processing. Very large scale changes could be produced that will help state growth in technology, sustainability. |

| | |
|----------------------------|--|
| Broader Impact: | Significant efforts are proposed, specifically targeted to: (1) undergraduate research opportunities (to address student drop out); (2) start-up packages for faculty hires from underrepresented groups; and (3) middle- and high-school programs. |
| Comments: | This proposal was selected as a model program because it presents transformative research that is tailored to the needs of the region. This proposal selects science that can have large-scale impact. Although sensors may be an established technology, they chose a slice where they can carve out expertise (particularly, chemical and genetically engineered biological material for biosensors and (2) electrochemical, fluorescence, and optical-fiber-based sensors.) This is an exemplary model of doing good science locally and niche carving. It is a balanced proposal consisting of research efforts, personnel building, and infrastructural enhancements, which are clearly stated. The goals of the investment are transparent. Additionally, the goal to improve the science literacy for a diverse population is sought and fully described. |
| -- | |
| Example #2-RII | |
| Title: | Investing in Maine Research Infrastructure: Sustainable Forest Bioproducts |
| Award Number: | 0554545 |
| PI: | Eckardt, Michael |
| Institution: | University of Maine |
| Type: | RII |
| Rating: | E, E, E, VG, VG, G |
| Intellectual Merit: | This is an innovative award. The goals are to develop infrastructure to convert bioproducts to other sources of fuel. Specifically, the aim of this proposal is the conversion of polymers from trees into new bioproducts while preserving and improving existing forest products and integrating production of chemicals, energy, biopolymers, and fuels. It is Maine's efforts to proactively address issues of sustainability from a scientific vantage and create new technologies and jobs along the way. |
| Broader Impact: | This proposal anticipates that a portfolio of products, chemicals, fuels, and/or energy, will be created to sustain the environment without injuring the forestlands. Conventional graduate student nurturing is presented and STEM efforts towards Native Americans are proposed (after some initial prodding from NSF). |
| Comments: | It is clear from the documentation that this proposal drummed up lots of interest. Reviewers raised questions about the scientific feasibility and the outreach, but all concluded that if successful this would be a big win for the state of Maine. This proposal is a transformative effort that plans to change the industry and science of Maine. This proposal was selected as a model program because it represents the kind of innovation that is possible within the EPSCoR program. |
| -- | |

Example #3-Co-funding

Title: CAREER: Linking novel thermophiles with ecosystem function: Study of a model spring in Nevada

Award Number: 0546865

PI: Hedlund, Brian P.

Institution: UN-LV

Type: Co-Funding

Rating: E, E, VG, G, G, F*
*Reviewer thought the outreach part was too small.

Intellectual Merit: The PI is proposing to study the microbial communities responsible for primary production in an alkaline hot spring, Boiling Spring, in Nevada. It focuses on four main areas of interest concerning the function of bacteria in the hydrothermal community: 1) spring chemistry, 2) *in situ* respiratory activities, 3) identifying the organisms responsible for primary production, and 4) culturing these organisms.

Broader Impact: The PI described an education and training plan that will involve undergraduates, graduate students and a postdoctoral researcher. In addition, it includes a six-day summer course where undergraduates visit students and teachers from Pyramid Lake High School for Native American (Paiute) students. The proposal states that UNLV is a minority-serving institution.

Comments: EPSCoR served this proposal well, since it was able to capture a good proposal that might otherwise have been declined. (The "F" was given by one reviewer for limited outreach efforts). This application was a resubmission that attended to the earlier feedback. The award is considered transformative to its specific region.

B.2 OUTCOME GOAL for Learning: "Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."

Proposal Number: EPS-0849385

Proposal Title: NSF EPSCoR Water Dynamics Workshop

Proposal Type: Workshop

Institution: University of Vermont

Project Director: Judith Van Houten

Ratings: VG/G*, VG, VG
*It is worth mentioning that the "good" part of the rating was well articulated in the review.

Brief project description:

The objectives of this workshop proposal were to:

- share information among NSF EPSCoR jurisdictions on the nature of water resources issues (*management, policy*) and the state-of-the-art in research (*science*) on water in the NSF EPSCoR jurisdictions
- explore collaboration and outreach strategies for researchers, managers and policy makers, and
- identify opportunities across NSF directorates for research support in water dynamics that will align with the expertise of scientists and engineers in NSF EPSCoR jurisdictions in order to improve funding competitiveness.

Intellectual merit:

The intent was to bring speakers from diverse groups who would highlight and share ideas on emerging scientific innovations in water dynamics. The presentations profiled new studies that focused on examining the dynamics of change in water systems and new research tools available to scientists and engineers to document and model these changes. The workshop was specifically designed to build collaborations among NSF EPSCoR researchers, thereby strengthening the nation's research capacity.

Broader impacts:

Workshop participants, from diverse interest groups and stakeholders addressed the relevance of research to water resource management and policy. They highlighted the opportunities for STEM educational outreach and workforce development through community based research. The social dynamics of the hydrological systems were explored, as were strategies for bringing the diversity of water researchers and students together in a forum that will contextualized all of these aspects.

Comments:

The subject of water dynamics while a bit outside the conventional "mainstream" was important, timely, and challenging. This workshop attracted researchers representing a wide range of interests and expertise areas and provided a forum for the free exchange of ideas and view points and was of great benefit to speakers and participants.

B.3 OUTCOME GOAL for Research Infrastructure: "Build the nation's research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools."

Proposal Number: EPS - 0554657

Proposal Title: IMUA 2: NSF Hawaii EPSCoR

Proposal Type: RII

Institution: University of Hawaii

Project Director: James R. Gaines

Ratings: E, E, E, VG, VG, G, G*

*This reviewer was not familiar with NSF's rating system.

Brief project description:

This proposal is a continuation of a previous EPSCoR award (IMUA 1). The intent is to develop and expand research capabilities in two major areas:

- evolutionary and ecological genetics, and
- ecosystem responses to environmental change.

Intellectual merit:

This proposal serves as a continuation of a previous EPSCoR award with an emphasis on evolutionary genetics and ecosystems research. In addition, the proposal focuses on the development of appropriate cyber-infrastructure, primarily as a support function for these research areas. These focus areas take special advantage of Hawaii's unique environmental setting and diversity of species, together with existing research strengths.

Broader Impacts:

The proposed infrastructure development will promote discovery, teaching, and learning, and should significantly enhance knowledge in evolutionary ecology and ecosystem impact. Proposed activities (which represent a continuation of a previous EPSCoR award) will also build on the recent enhancements in personnel and facilities. The human resource development and outreach focus of the proposal addresses the declining number of Hawaii students who are pursuing degrees (and are retained) in STEM-related fields. One of the goals of the proposal is to broaden the participation of underrepresented groups, particularly native Hawaiians.

Comments:

This proposal had an especially well thought out outreach strategy that specifically targeted native Hawaiian students. The proposal addresses the declining number of Hawaii students who are pursuing degrees in STEM-related fields and intends to reverse this trend by integrating discovery, teaching, and learning in a way that takes full advantage of geographic location and ecosystems.

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Proposal Number: HRD - 0811826

Proposal Title: Langston's Integrated Network College Featuring The STEM Digital Village, LINC, Phase II

Proposal Type: Co-fund

Institution: Langston University (OK)

Project Director: John K. Coleman

Ratings: E, VG, VG, G

Brief project description:

This proposal represents a continuation/expansion of Langston's Integrated Network College (LINC)-Phase I featuring the STEM Digital Village. The project builds on the successes from the HBCU-UP program with particular emphasis on Competency Performance Recording for Learning (CPR-L).

Intellectual merit:

The method of Learning by Teaching has proven to be useful in helping students to learn and apply concepts in core courses. Students identify, analyze and solve problems. The activities promote exploration and originality; encourage discussions and sharing of ideas, which are essential for the learning to take place. The process enhances discipline and self reliance by students.

Broader Impacts:

Broader Impact: A wider community will be reached through the Digital Village Web site. The interactive nature of the Digital Village activities fosters critical thinking as well as a sense of community. Special emphasis is placed on student retention rates.

Comments:

This project represents a very nice combination of an integrated learning system coupled with cyberinfrastructure (Digital Village Web site). As such, it may well represent a “test-bed” for new teaching and evaluation/assessment methods.

PART C. OTHER TOPICS

C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

The COV finds that the EPSCoR program has been extremely responsive to the recommendations in the last COV Report (2005). The COV finds no gaps or program areas in need of improvement.

C.2. Please provide comments as appropriate on the program’s performance in meeting program-specific goals and objectives that are not covered by the above questions.

The COV commends the Program for its responsiveness to the EPSCoR 2020 Workshop Report and encourages the Program to continue to focus on strategic priorities outlined in the Report.

C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

The COV commends the Program for collaborating with research directorates in the implementation of activities, such as the highly successful workshop on water issues. Similarly, the COV believes that recognition by the Foundation of the connectivity of energy, water and environmental issues presents a unique opportunity for broad engagement of the research directorates by EPSCoR.

C.4. Please provide comments on any other issues the COV feels are relevant.

- EPSCoR management should continue to work with jurisdictions to track and analyze outcome data related to the success and retention of scientists, postdocs and students supported with EPSCoR funding, including those supported in grants that have been closed for some time. The EPSCoR program invests heavily in developing talent in EPSCoR states

through activities associated with RII awards and with co-funding. It can take a longer period of time than the length of an RII or CAREER award to determine the outcome of such investments. For example, the impacts on the success, retention, and contribution to jurisdictional science and technology efforts of junior faculty who received the first co-funded CAREER awards are probably just reaching the time where such metrics can be evaluated. Understanding the relationship of EPSCoR investments in people to the relative success of those researchers, and the likelihood that those researchers are retained, could be useful in the evolution of strategies that maximize the development and retention of scientific talent in EPSCoR states. Additionally, the scientific impacts of EPSCoR investment in research infrastructure can take years beyond the original investment before they come to fruition. EPSCoR management should work with jurisdictions to systematically capture major scientific advances that arise as a result of a foundation built by EPSCoR, both to help articulate the importance of EPSCoR to quality science, and to use as a tool in understanding how to maximize the positive impacts of infrastructure investments.

- The COV noted a few cases where EPSCoR management proceeded to fund RII proposals that received relatively low reviewer ratings (e.g., several “fair” review scores) and were “not recommended” or “fund only if...” by the review panel. The COV has two comments related to this observation:
 - In the cases mentioned above, PIs were asked to respond in detail to several questions/concerns posed by program officers. In general, the COV found the analysis of the reviews and the PI responses by program officers to be well done and the funding decision well justified. Nonetheless, the COV recommends that EPSCoR use a systematic method or approach to document the assessment of the PI responses to reviewer concerns, particularly in cases where the review panel does not strongly support funding a proposal, but EPSCoR management decides to fund.
 - The COV commends the EPSCoR program for using well known, high quality reviewers from EPSCoR jurisdictions and non-EPSCoR states. Most reviewers are usually familiar with success rates in the research directorates and are familiar with the type of review scores usually associated with funding recommendations. In the cases mentioned above, some members of the COV were concerned that some of these reviewers might be somewhat put off upon learning that proposals were funded that had received relatively low review scores from the review panel they served on. If so, this could serve to dampen the credibility of the EPSCoR program among the non-EPSCoR state reviewer community in addition to causing some individuals to not want to participate in EPSCoR reviews. Therefore, the COV recommends that EPSCoR management keep these concerns in mind when making a decision to fund a proposal that the original panel did not strongly support.

It is important that EPSCoR jurisdictions not be intellectually isolated from non-EPSCoR jurisdictions. Collaboration among scientists from EPSCoR jurisdictions and non-EPSCoR states can leverage the scientific impact of EPSCoR investments as well as potentially create a better understanding of the quality of science in EPSCoR states. Yet, the COV is sensitive to the importance of focusing EPSCoR funding in EPSCoR states. The co-funding mechanism appears to be an attractive tool to facilitate collaborations among researchers from EPSCoR and non-EPSCoR jurisdictions because it can increase the probability of success of collaborative proposals by leveraging regular NSF program funds with support for the EPSCoR side of the collaboration. Such use of co-funding already occurs, and the COV recommends that EPSCoR management work to highlight this aspect of co-funding. EPSCoR management may also wish to

consider working with the EPSCoR community to develop other mechanisms to foster collaborations among researchers from EPSCoR jurisdictions and non-EPSCoR states.

C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

The COV commends the EPSCoR staff for an excellent job in posting the materials for electronic access in advance of the COV meeting. This facilitated a more efficient review process as the COV was able to review materials in a more timely fashion.

SIGNATURE BLOCK:

For the 2009 EPSCoR COV
Willie Pearson, Jr.
Chair

From: "W. Lance Haworth" <lhaworth@nsf.gov>
To: "Willie Pearson, Jr." <kingvassie@comcast.net>
Cc: "Henry N. Blount" <hblount@nsf.gov>
Sent: Thursday, August 27, 2009 2:53:02 PM GMT -05:00 US/Canada Eastern
Subject: RE: EPSCoR COV

Thanks again, Willie. We have no clarifications to request - it's a very clear report!

Best / Lance

From: Willie Pearson, Jr. [<mailto:kingvassie@comcast.net>]
Sent: Tuesday, August 25, 2009 8:30 PM
To: Haworth, W. Lance
Subject: Re: EPSCoR COV

Lance,

Thanks for your prompt rely. Please let me know if you need clarification on anything. The group was very thorough. I hope that you enjoyed your trip.

willie

----- Original Message -----

From: "W. Lance Haworth" <lhaworth@nsf.gov>
To: "Willie Pearson, Jr." <kingvassie@comcast.net>
Sent: Tuesday, August 25, 2009 6:54:02 PM GMT -05:00 US/Canada Eastern

Subject: RE: EPSCoR COV

Willie,

Many thanks for the report and the cover letter you enclosed. I will send a formal response shortly. Meanwhile, on behalf of the EPSCoR community and of NSF, we truly appreciate the time and effort put in by the COV members and in particular by the COV chair! I'm delighted to see this detailed and incisive report - it will be critical for NSF in keeping EPSCoR on the right track.

With best personal regards

Lance

W. Lance Haworth

Director, Office of Integrative Activities

Office of the Director

National Science Foundation, Room 1285N

4201 Wilson Boulevard, Arlington, VA 22230

Tel: 703-292-8040

lhaworth@nsf.gov <<mailto:lhaworth@nsf.gov>>

From: Willie Pearson, Jr. [<mailto:kingvassie@comcast.net>]
Sent: Monday, August 24, 2009 3:22 PM
To: Haworth, W. Lance
Subject: EPSCoR COV


Lance,


Please find attached: (a) letter of transmittal and (b) report. We missed you at the COV sessions.

Willie

PS Let me know if you require any additional information, such as hard copies.

**EPSCoR Responses to Findings and Recommendations
of the
Committee of Visitors Report
of
August 24, 2009**

TO: W. Lance Haworth 
Director, Office of Integrative Activities

FROM: Henry N. Blount, III 
Head, Office of Experimental Program to Stimulate Competitive Research
(EPSCoR)

SUBJECT: EPSCoR Responses to the FY 2009 Committee of Visitors Report

DATE: September 5, 2010

The OIA Committee of Visitors (COV) met August 11-12, 2009, at the National Science Foundation to review the EPSCoR program for the period FY 2005 – FY 2008. This review focused on:

- Integrity and efficiency of the program's processes and management practices, including quality and effectiveness of merit review processes, selection of reviewers, resulting portfolio of awards, and management of the program;
- Results of OIA EPSCoR investments in pursuit of Foundation strategic outcome goals of discovery, learning, and research infrastructure; and
- Other aspects of the program structure and management, including EPSCoR responsiveness to recommendations from previous COVs and other external evaluations.

The report prepared by the COV reflects careful examination and insightful evaluation of the program. Dr. Willie Pearson, Jr., served as Chair of the COV and led its detailed analysis of 108 of the 1,483 actions taken during the period of review, including 96 awards and 12 declinations. This sample included essentially all of the Research Infrastructure Improvement (RII) actions, all of the Outreach and Workshop actions, and a representative set of Co-Funding actions.

EPSCoR is pleased with the COV's finding that progress made subsequent to the FY 2005 review "has been impressive and is a testimony to how serious the leadership is about continuous progress and improvement in the program itself and the service that the Foundation provides to the country overall." The Committee identified three key elements that prompted significant improvements in Program image, quality and overall management, namely (1) the respect for and responsiveness of the current leadership team; (2) the prompt and effective implementation of recommendations from the FY 2006 EPSCoR 2020 Workshop Report; and (3) EPSCoR's move from EHR to OD/OIA that affords greater internal visibility and credibility.

Of particular note are the Committee's findings of strong Program performance in merit review quality and integrity, strength and diversity of reviewers, thoroughness and clarity of documentation, quality of program staff, crispness of program focus, effective use of cyber tools, and overall transparency of EPSCoR processes. Also of note is the Committee's endorsement of the Program's Foundation-wide engagement of research directorates and offices that serves to strengthen EPSCoR's intellectual base and to integrate discovery and learning more effectively. The Committee acknowledged the Program's recognition of the uniqueness of opportunities for discovery, innovation, and workforce development within each jurisdiction. Further, the Committee applauded the Program's cognizance of economic development capacities and the need to link assessment and goal setting to the education and research opportunities that also strategically expand economic development.

The Committee of Visitors found no program areas in need of improvement or gaps within program areas. However, the Committee provided five specific recommendations for improving Program performance:

COV: Tracking and Analyzing Longitudinal Outcome Data

"EPSCoR management is encouraged to continue to work with jurisdictions to track and analyze outcome data related to the success and retention of scientists, postdocs and students supported with EPSCoR funding, including those supported by grants that have been closed for some time."

NSF EPSCoR strongly agrees that detailed data, captured in a uniform fashion over time, is essential to assessing the outputs and outcomes of EPSCoR investments, and to effective program management overall. To this end, in FY 2009, EPSCoR introduced mandatory, standardized data capture and reporting for RII Track-1 awards. Utilizing templates developed jointly with the EPSCoR community, RII Track-1 awardees provide, as an additional component of annual and final reports, qualitative and quantitative data reflecting highlights of notable accomplishments in research and education in science and engineering; publications, patents, and extramural funding; collaborations; faculty hires and departures; engagement of postdoctorals, graduate students, and undergraduates; diversity of participants and institutions; external engagement; and

cost sharing and cost contributions. EPSCoR is now undertaking a retrospective gleaning of comparable data from prior RII awards made over the last decade.

Development of longitudinal data reflecting the outputs and outcomes of EPSCoR co-funding since its formal initiation in FY 1998 will be undertaken in FY 2011. These data will provide insights into the impact of EPSCoR co-investments in disciplinary research and education programs throughout the Foundation as well as in cross-cutting programs with specific target audiences such as CAREER and IGERT, as well as collaborative pursuits.

COV: Systematic Documentation of Post-Panel Input to Merit Review Process

"The COV recommends that EPSCoR use a systematic method or approach to document the assessment of PI responses to reviewer concerns, particularly in cases where the review panel does not strongly support funding a proposal but EPSCoR management decides to fund."

Review of EPSCoR RII proposals is a multi-stage process. Initially, a panel of the whole is assembled with expertise in all areas of science and engineering contained in the proposals under consideration. In addition to depth in science and engineering, this panel must also bring to the merit review process expertise in all of the elements required of RII proposals. Members of this panel prepare and submit preliminary reviews of proposals prior to coming together for full discussion of these requests, and finalization of their individual reviews and overall panel recommendations. These recommendations fall into three categories: 'Fund', 'Do Not Fund', and 'Fund If' issues identified in the panel review are appropriately addressed by the principal investigator through post-panel correspondence between NSF EPSCoR and the PI. The placement by the panel of proposals in these three categories reflects unanimous concurrence by all panel members, and conveys to NSF EPSCoR the responsibility for judging the appropriateness and adequacy of PI responses to reviewer concerns.

To mitigate the need for post-panel clarification, EPSCoR began, in FY 2008, to include more explicit language detailing expectations for each program element called for in RII solicitations. Similarly, more explicit language was incorporated into RII solicitations in guidance to PIs and in descriptions of program-specific review criteria.

These actions resulted in reduction in the need for post-panel clarifications. Because of increases in the scope and complexity of RII proposals in FY 2008 and FY 2009, together with strict page limitations on individual proposal elements, the need for post-panel clarification is still necessary in some cases. To aid in uniformity of process and in equity in decision-making, standardized formats for query and response have been implemented. Both design of queries and evaluation of responses now benefit markedly from input by scientists and engineers in relevant disciplinary directorates and offices of the Foundation.

COV: Reviewer Ratings and Actions on Proposals

"The COV commends the EPSCoR program for using well known, high quality reviewers from both EPSCoR jurisdictions and non-EPSCoR states. Usually, most reviewers are familiar with success rates in the research directorates as well as the type of review scores commonly associated with funding recommendations. Some members of the COV were concerned that reviewers might be somewhat put off upon learning that proposals were funded that had received relatively low review scores from the review panel on which they served. If so, this could serve to dampen the credibility of the EPSCoR program among the non-EPSCoR jurisdictional reviewer community. The COV recommends that EPSCoR management keep these concerns in mind when making a decision to fund a proposal that the original panel did not strongly support."

EPSCoR notes the Committee's acknowledgement of the Program's move toward using more and more well-known reviewers for RII proposals. This practice strengthens the intellectual base of NSF EPSCoR activities, broadens awareness of EPSCoR and its purpose, and provides more informed perspectives that enrich feedback to both the EPSCoR community and the Foundation. While these reviewers are intimately familiar with programs within the directorates and offices of the Foundation, they often have limited experience with the goals and objectives of EPSCoR.

To better prepare such individuals to review RII proposals, NSF has the responsibility to ensure that all reviewers fully understand EPSCoR goals and objectives, and its strategies of building research capacity in EPSCoR jurisdictions through strengthening research infrastructure. In FY 2011, EPSCoR will initiate a comprehensive approach to reviewer preparation that will begin with dialogue at the time of panelist recruitment, followed by pre-panel webinars, and culminating with a more extensive panel charge. These steps will address issues including RII program breadth and its state-based character, RII merit review in NSF-wide context, and the insidious nature of implicit bias. Utilization of more and more well-known reviewers who are fully prepared to address all aspects of RII proposals will help to ensure that funding decisions are based on **'Science First'** rather than **'Science Only.'**

COV: Mechanisms to Increase Effective Collaborations

"Collaboration among scientists from EPSCoR and non-EPSCoR jurisdictions can leverage the scientific impact of EPSCoR investments as well as potentially create a better understanding of the quality of science in EPSCoR jurisdictions. . . . The co-funding mechanism appears to be an attractive mechanism to facilitate collaborations among researchers from EPSCoR and non-EPSCoR jurisdictions because it can increase the probability of success of collaborative proposals by leveraging regular NSF program funds with support for the EPSCoR side of the collaboration. Such use of co-funding already occurs, and the COV recommends that EPSCoR management work to highlight this aspect of co-funding. EPSCoR management may also wish to consider working with the EPSCoR community to

develop other mechanisms to foster collaborations among researchers from EPSCoR and non-EPSCoR jurisdictions.”

EPSCoR agrees fully with the Committee’s observations regarding effective collaborations, particularly those that span traditional organizational and geographical boundaries. These collaborations can increase research capacity of jurisdictions, consortia, or regions to enable stronger competitiveness in large scale and cross-cutting competitions. Collaborations can provide effective platforms for discovery-based science and engineering, for broadening participation, for workforce development, for strengthening cyberinfrastructure, for extending and enhancing external engagement, and for developing and sustaining research competitiveness more broadly. The development of mechanisms to foster collaborations among EPSCoR and non-EPSCoR jurisdictions has been discussed within NSF EPSCoR as well as within the EPSCoR community. The FY 2005 COV report endorses this concept but cautions against pitfalls arising from lack of transparency of the intent and implications of such initiatives.

Experiences of EPSCoR jurisdictions in RII Track-2 collaborations have shown the benefits of inter-jurisdictional cooperation and have led to broader acceptance of the practice. Broadening the scope of such collaborations among EPSCoR scientists and engineers to include their non-EPSCoR colleagues is a logical next step. EPSCoR support of collaborative research projects accounts for ~11% of the annual co-funding budget. While the majority of that investment is in collaborations among EPSCoR jurisdictions, there is significant growth in collaborations among EPSCoR and non-EPSCoR jurisdictions. This growth is projected to continue as the complexity of challenges to technological and economic development at jurisdictional, regional, and national levels increases. The EPSCoR community’s growing focus on issues such as energy, water, environment, climate, and natural disasters speaks to this. To seed the development of broad-based collaborative approaches to the science and engineering undergirding these issues, EPSCoR will expand its investment in workshops that meld expertise from EPSCoR and non-EPSCoR jurisdictions, and that engage the programmatic perspectives of the Foundation’s disciplinary directorates and offices.

COV: Recognizing ‘Transformative’

“The COV feels that it is important to recognize that what is transformative should be determined by particular characteristics of a given jurisdiction, instead of universal criteria.”

EPSCoR agrees with the Committee’s position that ‘transformative’ is a place-based characteristic. That which is transformative in a given setting in a particular jurisdiction may not be transformative in others. Experience has shown that the largest incremental benefit of investment in the research infrastructure of a given jurisdiction derives from where the jurisdiction is in its research competitiveness and its preparedness to move forward from that juncture. These two factors are critically coupled to the jurisdiction’s

Science and Technology (S&T) Plan, its S&T business plan, its governing committee, and the intellectual merit and broader impacts of its research programs.
